2006-07 Longitudinal Evaluation Report

Senate Bill 525

Nevada Early Childhood Education (ECE) Program

Nevada Department of Education
Office of Special Education,
Elementary and Secondary Education,
and School Improvement Programs
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Preface

As required by the 2005 Nevada State Legislature Senate Bill (SB) 525, the Nevada Department of Education (NDE) has conducted annual evaluations of the Nevada ECE program each year since 2001. In addition, NDE has conducted longitudinal evaluations since 2004 as also required. Since inception, the Nevada ECE program enrollment has increased from 41% non-English speaking to the current 55% non-English speaking enrollment. The program Hispanic enrollment has also increased from 46% in 2001-02 to 62% in 2006-07. In addition, each year the program also continues to serve a high percentage of low-income families. In 2006-07, 59% of families served had incomes less than $30,000. As a result of these demographics and shifts, the program continues to be a critical component to meeting the needs of our growing English Language Learner population.

As required in SB525, Section 13, Subsection 3c, the main purpose of the longitudinal evaluation is to determine the effectiveness of the program on the academic achievement of children who participate in the program over time.

This evaluation studies the benefits and gains that are made and/or maintained by the children over time. The design of the 2006-07 longitudinal evaluation is to continue to follow two cohorts including the first Cohort (Cohort 1) and the most recent Cohort (Cohort 3) as they enroll in kindergarten. Starting in 2004, the longitudinal evaluation began by following Cohort 1 (children who participated in Nevada ECE during 2003-04 school year) as they entered kindergarten. The 2006-07 longitudinal evaluation continues to follow Cohort 1 who is now in Grade 2 in addition to following the most recent Cohort 3 (children who participated in Nevada ECE during 2005-06) as they enter Kindergarten.

The data collected in this study indicates that children who enter the Nevada ECE program begin significantly below their peers at enrollment. Upon completion of the program, this data indicates that these children made significant gains in preschool and continue to maintain and/or increase these gains in kindergarten, leveling the playing field for future learning and success. Other findings for Cohort 1 include: 1) Children were equally to better prepared to enter Grade 2 than their peers, 2) Children performed as well as or better than their peers on academic and social skills, and 3) Parent involvement and attendance rates were maintained and/or commensurate with that of their peers. Findings for Cohort 3 include: 1) Children made significant gains in receptive and expressive vocabulary, 2) Non-English speaking children continued to make larger gains in receptive and expressive vocabulary than the norming population, 3) Children were equally to better prepared to start Kindergarten, 4) Children performed as well as or better than their peers on eight academic and socio-emotional skills, 5) Parent involvment rates were higher than that of their peers, and 6) Attendance rates were commensurate to their peers.

In addition, the data found in this report parallels national research, finding those who need it most reap the greatest benefits from early education programs. In addition, children may gain full benefit of their school experiences and be more successful in life as a result of early childhood programs and produce both short and long term results especially for disadvantaged children (Office of Educational Research and Improvement; US Dept. of Ed., 1989). Such longitudinal gains are also supported by national research, indicating that high quality, accessible early childhood education, promotes substantial returns of investment for our communities and society yielding up to 16% returns on investment (High Scope Perry Preschool National Study).

Anna Severens
Nevada ECE Project Coordinator, Nevada Department of Education

Executive Summary

The 2005 Nevada State Legislature passed Senate Bill (SB) 525 that continued the funding of the Nevada Early Childhood Education (ECE) Program and appropriated $3,032,172 in the 2005-06 fiscal year and $3,152,479 in the 2006-2007 fiscal year for early childhood education. The purpose of the legislation is to initiate or expand pre-kindergarten education programs. Eight school districts and 2 community-based organizations operated an early childhood education program in 2006-07.

The Nevada Department of Education (NDE) conducted an annual evaluation of the Nevada ECE program in 2006-07, see *Nevada Early Childhood Education 2006-07 Evaluation Report*. The results of the annual evaluation in 2006-07, as well as the results of all previous annual evaluations, shows that children who participated in the Nevada ECE Program made significant learning gains in auditory comprehension and expressive communication, key skills for school success.

In addition to the annual evaluation conducted by NDE, Senate Bill 525 directed the NDE to conduct a longitudinal evaluation study of the effectiveness of the program on the developmental progress of children and parental involvement. As stated in SB525, Section 13, Subsection 3c, the main purpose of the longitudinal evaluation is to determine the effectiveness of the program on the academic achievement of children who participate in the program over time. (See also Summary of Results).

Research indicates that the benefits of preschool education reap both short term and long term benefits for children. While impressive cognitive gains are made as a result from preschool participation, these gains level off into later years, but consequently are equated to longer term benefits into children's later years of school. The pattern of outcomes found in national longitudinal evaluations of effects of preschool suggests that the positive long-term effects come about mainly because children in preschool had different experiences in elementary school as a result of the short term, cognitive gains. Increasing children's cognitive abilities early eases the transition into school and reduces the likelihood that they will be tracked into low ability groups, placed in special education, or retained in grade. (Office of Educational Research and Improvement; US Dept. of Ed., 1989).

Doing better in the early grades is important for long-term success because the early grades in school constitute a "critical period" for children's adjustment as students. These long term benefits

include decreased costs related to special education and retention, higher adult earnings, decreased involvement in crime, greater social and emotional maturity, and greater academic motivation to name a few. (High Scope Perry Preschool National Study, and Entwisle, 1995). Such trends therefore cost the state and districts less over time by providing quality early childhood education experiences during these "critical periods" to lay the foundation for children's learning and future school success.

This report presents the findings and conclusions of the NV Comprehensive Early Childhood Education Program longitudinal evaluation study that includes trends similar to national research as described above. This study followed two cohorts of Nevada ECE children:

- Cohort 1 — four-year olds who participated in Nevada ECE during 2003-04 and entered grade 2 in 2006-07, and
- Cohort 3 — four-year olds who participated in Nevada ECE during 2005-06 and entered kindergarten in 2006-07.

This longitudinal study focused on two indicators, as required in Section 14 of Senate Bill 525: 1) the developmental progress of children after their completion of the program, and 2) parental involvement after completion of the program. The most significant findings are in Cohort 3 due in part to stronger data collection methods and tools available, but also reflects the research supported evidence of the importance of short term benefits (transition into kindergarten and early grades) laying the foundation for long term benefits in the later years as described by the effects of preschool research highlighted above.

Key Findings

1. Children in Cohort 3 made significant gains in receptive and expressive vocabulary during their participation in the Nevada ECE program in 2005-06 as shown by the Peabody Picture Vocabulary Test and Expressive One Word Picture Vocabulary Test. Cohort 3 children closed some of the gap in achievement with average students while in preschool. Then, while in kindergarten in 2006-07, the students maintained their improved level of performance that they had achieved by the end of preschool.
2. In regards to children who did and who did not speak English at enrollment into the Nevada ECE program, the results show that both groups made significant gains in receptive vocabulary and expressive vocabulary during preschool in 2005-06. In addition, the children who did not speak English at enrollment into preschool continued to make larger gains on expressive vocabulary than the norming population during kindergarten, and the gains approached significance, $p \leq .01$. These children appear to have closed the gap in achievement with average students even further.

3. The results from a kindergarten teacher survey in spring 2007 show:
    - 86 percent of the teachers thought that the Cohort 3 children were "equally prepared" to "better prepared" to start kindergarten than classmates.
    - 86 percent of teachers rated Cohort 3 children as performing 'equally prepared' or 'better prepared' than their peers on eight academic and socio-emotional skills. The survey results suggest that teachers thought Cohort 3 children, while in kindergarten in 2006-07, maintained their improved level of performance they had achieved in preschool.
4. As shown through teacher surveys, NV ECE children performed as well or better than their peers on eight academic and social skills in Grade 2. These results were also similar to that of their Grade 1 and Kindergarten teacher surveys. In other words, the results suggest that children essentially maintained the gains that they had made three years ago in 2003-04 during preschool through grade 2 in 2006-07.
5. Parents of NV ECE children attended parent/teacher conferences initially at a higher rate in kindergarten, and then maintained their involvement at a rate about the same to the parents of other students at the schools through Grade 2.
6. Overall, NC ECE Children were equally to better prepared to enter Kindergarten and Grade 2 than their peers.

Conclusions: Developmental Progress of Children

Children who participated in the Nevada ECE Program were clearly better prepared to enter kindergarten than similar groups of classmates, and then, maintained the significant learning gains they achieved in preschool through the end of their kindergarten school year.

This is an important accomplishment for the largely at-risk student population served in the program because it closed some of the gap in achievement with average students, an obstacle that most at-risk student populations face, and it provided them a better chance at early school success. It is especially important for the growing number of English language learners served in the program who, in fact, may have even benefited the most academically from the Nevada ECE program. These developmental gains during these "critical periods" of learning help ease their transition into school by preparing them for future success.

After kindergarten, it appears Nevada ECE children continued to be better prepared to enter grade 1 and then grade 2 than classmates, and then, continued to perform as well as or better than classmates in grade 1 and 2. The longitudinal evaluation for 2007-08 will provide more conclusive data on the developmental progress of Nevada ECE children after kindergarten.

Conclusions: Parent Involvement

The parents of the children who participated in the Nevada ECE program continued to be very involved in their children's learning after the preschool program. In fact, the parents of the Nevada ECE children were even more involved than their classmates' parents during kindergarten.

After kindergarten, the parents of the Nevada ECE children continued to be very involved in their children's learning in grade 1 and 2 at a level commensurate with classmates' parents.

SUMMARY OF RESULTS				
Cohort 1- Results				
Evaluation Standard	**Data Collection Instruments**	**Methodology**	**Demographics**	**Outcomes**
Grade 2 Readiness	DIBELS, Teacher Surveys	Comparison group posttest only design	Male- 50% Female- 50% Asian/Pacific Islander- 4% American Indian- 1% Hispanic- 57% African American- 5% White- 31% Other- 2% Limited English Proficient- 50%	75% of the teachers responded that the Cohort 1 children were 'equally well' to 'substantially better' prepared than their non-ECE peers. Students maintained their gains with their peers as measured by the DIBELS.
Grade 2 Performance				77% of teachers reported Cohort 1 children as performing 'as well as' or 'better than' their peers on the eight skills.
Parent Involvement	Teacher Surveys			94% of teachers reported that the parents of the Cohort 1 children attended the parent/teacher conferences, which was at about the same rate as their peers.
Student Attendance	Days enrolled/days attended			Attendance rates of Cohort 1 children increased from kindergarten (93.5%) to grade 2 (96.8%).
Cohort 3- Results				
Evaluation Standard	**Data Collection Instruments**	**Methodology**	**Demographics**	**Outcomes**
Student Achievement Non-English speaking skills at enrollment	PPVT, EOWPVT, DIBELS, Teacher Surveys	One group pretest/posttest	Male- 51% Female- 49% Asian/Pacific Islander- 4% American Indian- 1% Hispanic- 62% African American- 4% White- 27% Other- 2% Limited English Proficient- 44%	Cohort 3 children scored substantially below the national average before they entered the ECE program for both receptive and expressive vocabulary: 17th and 10th percentiles, respectively. By the end of the program, students made substantial gains, improving to the 35th and 28th percentiles---closing the achievement gap with the national norming sample in the two areas. These gains were maintained through their kindergarten year. Cohort 3 children performed at a level equal with their peers as measured by the DIBELS. The gains made by non-English speaking children were even more significant than English speaking children.
Kindergarten Readiness	Teacher Surveys	Comparison group posttest only design		86% of the teachers responded that the Cohort 3 children were 'equally well' to 'substantially better" prepared to start kindergarten than their peers.
Kindergarten Performance	Teacher Surveys	Comparison group posttest only design		86% of teachers reported Cohort 3 children as performing 'as well as' or 'better than' their peers on the eight skills.
Parent Involvement	Teacher Surveys	Comparison group posttest only design		97% of teachers reported that the parents of the Cohort 3 children attended the parent/teacher conference, which was at a higher rate than did the parents of their peers.
Student Attendance	Day enrolled/days attended	Comparison group posttest only design		Attendance rates of Cohort 3 children were at a similar rate to that of their peers.

Chapter I. Introduction

The 2005 Nevada State Legislature passed Senate Bill (SB) 525 that appropriated $3,032,172 in the 2005-06 fiscal year and $3,152,479 in the 2006-2007 fiscal year for early childhood education.[1] According to SB 525, the grants are "to initiate or expand pre-kindergarten education programs." The grants must also have a parenting component, based on the original legislation for the Nevada Early Childhood Education (ECE) Program.

In July 2005**,** NDE awarded a competitive grant to 10 school districts and community-based organizations to operate an early childhood education program based on the recommendations of peer reviewers. Eight of the successful applications are school districts, including Carson City, Churchill County, Clark County, Douglas County, Humboldt County, Pershing County, Washoe County, and White Pine. The two remaining application were Great Basin Community College in Elko and the Classroom on Wheels Program which operates three programs in four counties.

The Nevada Department of Education conducted an evaluation of the Nevada ECE program in 2006-07, see *Nevada Early Childhood Education 2006-07 Evaluation Report*. The overall conclusion of the report was:

> *Nevada ECE projects have improved the quality of their early childhood programs since 2001-02 when the Nevada ECE program began and Nevada ECE projects have positively impacted program participants in early childhood development and parenting skills.*

In addition to the annual report, Senate Bill 525 directed the Nevada Department of Education to conduct a longitudinal study of the effectiveness of the Nevada ECE Program.

According to Section 14 of Senate Bill 525, the longitudinal evaluation must include:

(*a) Longitudinal measures of the developmental progress of children before and after their completion of the program, and*

(b) Longitudinal measures of parental involvement in the program before and after completion of the program.

1 The 2001 Nevada State Legislature funded Nevada Early Childhood Education with $3.5 million.

NDE viewed the main purpose of the longitudinal evaluation to determine whether the children who participated in the Nevada ECE program maintained the significant learning gains they achieved in preschool into their K-12 school career.

This report presents the findings of a longitudinal study, consistent with Senate Bill 525, which follows two groups or cohorts of four-year old children who participated in the Nevada ECE program and are now in public schools, as shown in Table 1[2]. These two cohorts are further defined below.

Table 1. School Year in Nevada ECE Program and Current Year in School

Cohort	School Year in ECE Program	Current Grade in 2006-07
Cohort 1	2003-04	Grade 2
Cohort 3	2005-06	Kindergarten

Cohort 1 *(Nevada ECE Children in 2003-04 now in Grade 2 during 2006-07).* The Nevada ECE program provided services to 1,027 families, including 1,054 children and 1,055 adults, from July 1, 2003 through June 30, 2004. Out of the 1,054 children in the program, the longitudinal study followed the 844 children who were four years old during 2003-04 and age-eligible to enter grade 2 in 2006-07.

Cohort 3 *(Nevada ECE Children in 2005-06 now in Kindergarten during 2006-07.)* The Nevada ECE program provided services to 1,093 families, including 1,125 children and 1,128 adults, from July 1, 2005 through June 30, 2006. Out of the 1,125 children in the program, the longitudinal study followed the 944 children who were four years old during 2005-06 and age-eligible to enter kindergarten in 2006-07.

Below are some key characteristics of Cohort 1 and Cohort 3 children and families when they entered the Nevada ECE program in 2003-04 and in 2005-06.

- ***Many families are poor:*** 38 percent of the families in 2003-04 and 36 percent in 2005-06 had incomes under $20,000.

2 The longitudinal study does not report on Nevada ECE children from Cohort 2 (four year old children who participated in the Nevada ECE program during school year 2004-05 and are now in grade 1) because the data collection efforts and results are essentially the same as those for Cohort 1.

- ***Most children are minority students:*** 70 percent of children in 2003-04 and 73 percent in 2005-06 were minority students.
- ***Many children are English language learners:*** 49 percent of the children in 2003-04 spoke Spanish at home and 43 percent of the children in 2005-06 were classified as Limited English Proficient by project staff.
- ***Most children had no previous early childhood education experiences:*** 67 percent of the children in 2003-04 and 77 percent in 2005-06 did not participate in any other educational program prior to Nevada ECE.
- ***Most children would not have attended any pre-school program before kindergarten:*** 69 percent of the children in 2003-04 and 79 percent in 2005-06 would not have attended any structured or semi-structured early childhood education program prior to entering kindergarten without Nevada ECE.

The profile of the children and families who are the focus of the longitudinal study is that many of these Nevada ECE families provided their children with limited formal educational experiences prior to the program, are from minority ethnic backgrounds, are English language learners, and are poor. In other words, Nevada ECE children represent an "at-risk" student population, who typically achieve below less disadvantaged students.

Organization of this Report

Following this chapter, *Chapter II Longitudinal Evaluation Design* describes the evaluation of the Nevada ECE program. *Chapter III Cohort 1 Results from Grade 2* presents data on the educational progress of Cohort 1 participants in grade 2. *Chapter IV Cohort 3 Results from Kindergarten* presents data on Cohort 3 participants in kindergarten. Finally, *Chapter V Summary of Findings and Conclusions* presents the findings and conclusions.

Chapter II. Longitudinal Evaluation Design

Senate Bill 525, Section 14 identifies specific longitudinal evaluation requirements for early childhood education programs funded under the legislation. (See Appendix A.) Essentially, the longitudinal evaluation must include indicators that measure:

- the developmental progress of children after their completion of the program, and
- parental involvement in the program after completion of the program.

The Nevada Department of Education established an Early Childhood Education Evaluation Design Team in summer 2006 to develop an evaluation design consistent with the evaluation requirements outlined in SB 525. The Evaluation Design Team developed a longitudinal study that would track the performance of two cohorts of children:

- Cohort 1 — four-year olds who participated in Nevada ECE during 2003-04 and entered grade 2 in 2006-07, and
- Cohort 3 — four-year olds who participated in Nevada ECE during 2005-06 and entered kindergarten in 2006-07.

The longitudinal study focused on two 'children variables' (student learning and student attendance) and one 'parent variable' (parent/teacher conference attendance). Student learning was assessed by four measures for children in kindergarten (Peabody Picture Vocabulary Test, Expressive One Word Picture Vocabulary Test, Dynamic Indicators of Basic Early Literacy Skills, and teacher ratings of student performance) and two measures for children in grade 2 (Dynamic Indicators of Basic Early Literacy Skills and teacher ratings of student performance). The other 'children variable' was student attendance rate. Parental involvement was measured by parent participation in fall parent/teacher conferences.

The primary purpose of the study, however, focuses on student learning: to determine the effectiveness of the program on the academic achievement of children who participate in the program over time.

Methodology

The Evaluation Design Team developed two studies—for Cohort 1 and for Cohort 3. The methodology for Cohort 1, as well as the results, is presented first since these students are the first group of students who participated in the Nevada ECE program and participated in the first longitudinal study in 2004-05.

The Cohort 1 study used a *comparison group posttest only design,* different than Cohort 3 study, because the test used to measure student learning when the Cohort 1 children were in preschool was the Preschool Language Scale (PLS). The PLS was replaced by the Peabody Picture Vocabulary Test (PPVT) and the Expressive One-Word Picture Vocabulary Test (EOWPVT) because these assessments can be administered to students during their entire K-12 school career, and the PLS can only be administered to children up through six-years old, or through kindergarten. The Cohort 3 study, on the other hand, administered the same assessments used to measure student learning in preschool to also assess student learning at the end of kindergarten, and therefore with consistent measurements, data could be easily compared.

Cohort 1—Grade 2 Study

The Cohort 1 Grade 2 Study uses a *comparison group posttest only design*. In a comparison group posttest only design, the performance of Cohort 1 students is evaluated against a comparison group, i.e., the classmates of the Cohort 1 grade 2 students.

Comparison group posttest only design. The comparison group posttest only design involves separate analyses of three different groups of Cohort 1 students. The first analysis includes all Cohort 1 grade 2 students. In this case, the evaluation administered a survey to the grade 2 teachers of Cohort 1 children, collecting data on the three data elements. The teacher survey asked teachers to rate the Cohort 1 children, compared to other children in the classroom, on their readiness skills when entering grade 2 and on their current level of performance in grade 2. The teacher survey also asked teachers to report whether the parents of the Cohort 1 children participated in the fall parent/teacher conference.

The second analysis includes only a small sample of the Cohort 1 students as there are no

required assessments for students in Grades 1 and 2. Therefore, a statewide common achievement measure was not available. The evaluation collected some additional, but limited student achievement data from the administration of the Dynamic Indicators of Basic Early Literacy Skills (DIBELS) to students at schools participating in the Nevada Reading First programs. These schools administered the DIBELS in fall 2006 and spring 2007. In this analysis, the evaluator compared the performance of Cohort 1 students who took the DIBELS with a sample of their kindergarten classmates, matched for ethnicity.

The third analysis includes all Cohort 1 grade 2 students. This analysis examined student attendance rate of Cohort 1 students compared with grade 2 students in the same schools, as measured by days enrolled and days attended.

Cohort 3—Kindergarten Study

The Cohort 3 Kindergarten Study included two research designs: a *one group pre-test/posttest design* and a *comparison group posttest only design*. These two research designs were the same designs conducted for the previous Nevada ECE cohort, Cohort 1, when they were in kindergarten. In addition, the *comparison group posttest only design* is similar to the design used with Cohort 1 students in grade 2.

One group pretest/posttest. In a one-group pretest/posttest design, a group of students is tested prior to participation in a program and tested again after the program to measure the program's impact. In this case, the group includes a random sample of 300 of the 944 four-year olds from Cohort 3. The longitudinal study used the same early childhood education assessment instruments used in the annual evaluation of Nevada ECE program when these children were in the preschool program, the Peabody Picture Vocabulary Test (PPVT) and the Expressive One Word Picture Vocabulary Test (EOWPVT). The PPVT and EOWPVT were administered initially when children entered the Nevada ECE program in 2005-06 and again at the end of the school year or when they exited the program. For the longitudinal study, the PPVT and EOWPVT were administered again in spring 2007 when the Nevada ECE children were in kindergarten. The use of the PPVT and EOWPVT as the follow-up measures in kindergarten facilitates more valid comparisons of children performance during their participation in Nevada ECE program with their per-

formance in kindergarten. Not only are the same tests used, but both tests are norm-referenced tests, allowing the evaluation to compare the performance of students in the ECE program against the national norms.

The evaluator trained nine test administrators on the administration of the PPVT and EOWPVT. All nine test administrators had previously administered early childhood assessments and five of the nine had previous experience with the PPVT and EOWPVT. The nine test administers tested the children from April 9 to May 11, 2007.

Comparison group posttest only design. As mentioned previously, a comparison group posttest only design contrasts the performance of a group of students evaluated against a comparison group at the end of a program. In this case, Cohort 3 students are compared with kindergarten classmates.

The comparison group posttest only design involves separate analyses of three different groups of Cohort 3 students, similar to the analyses conducted for Cohort 1 students described earlier. The first analysis involves the same sample of 300 students who participated in the one group pretest/posttest design. In addition to the administration of the PPVT and EOWPVT, the test administrators collected data on three other data elements from the kindergarten teachers of the Cohort 3 children using a teacher survey developed for the longitudinal study: readiness to enter kindergarten, performance during kindergarten, and parent involvement.

The second analysis examines the performance of a sample of Cohort 3 students who attended schools participating in the Nevada Reading First program in 2006-07. Additional limitations were encountered as explained in Cohort 1, as there are no required assessments for students in Grades 1 and 2. Therefore, in this analysis the evaluator compared the performance of Cohort 3 students in kindergarten who took the DIBELS with a sample of their classmates, matched for ethnicity.

The third analysis includes all Cohort 3 kindergarten children. This analysis examined student attendance rates as measured by days enrolled and days attended. In this analysis, the evaluator compared Cohort 3 students with kindergarten students in the same schools.

Data Collection Instruments

Table 2 shows the variables and the instruments/measures used to assess the variables in the Cohort 1 and Cohort 3 studies. In most cases, the instruments or measures are the same for the Cohort 1 and Cohort 3 studies. The descriptions of the data collection instruments for the two studies are combined for the two cohorts and presented below; any differences for the two cohorts are noted in the descriptions.

Table 2. Data Collection Instruments Used in Cohort 1 and Cohort 3 Studies by Variable

Variables (Instruments/Measures)	Cohort 1 in Grade 2	Cohort 3 in Kindergarten
Student Learning		
♦ Peabody Picture Vocabulary Test		✓
♦ Expressive One Word Picture Vocabulary Test		✓
♦ Dynamic Indicators of Basic Early Literacy Skills	✓	✓
♦ Teacher Survey	✓	✓
Parent Involvement		
♦ Teacher Survey	✓	✓
Student Attendance		
♦ Days Enrolled/Days Attended	✓	✓

Peabody Picture Vocabulary Test-III (PPVT). The PPVT is an individually administered norm-referenced test that measures receptive vocabulary (understanding/ interpreting what is heard) and gives a quick estimate of the child's verbal and other literacy-related skills. The PPVT is appropriate for children between two and 18 years old. Nevada ECE programs administered the Peabody Picture Vocabulary Test to children beginning at three years-old. It can be administered in English or Spanish depending on the child. All Nevada ECE projects elected to administer the test in English only since school readiness, which includes English language proficiency, is a program goal.

The PPVT data are expressed in standard score units. PPVT scores have a standard score mean of 100 and a standard deviation of 15. There is no "maturation effect" for the PPVT. Therefore, our expectation is that the PPVT standard scores should not change in

the absence of a "treatment." Thus, an increase in the standard score on the PPVT during the time a child participates in Nevada ECE is taken as an indication that Nevada ECE is helping increase the child's receptive vocabulary.

Expressive One-Word Picture Vocabulary Test (EOWPVT). The EOWPVT is a standardized, norm-referenced test designed to assess an individual's English speaking vocabulary by asking the child to name objects, actions, and concepts depicted in illustrations. The age-range for the test is 2 years 0 months to 18 years 11 months. The test contains 170 test items that begin relatively easy and become progressively more difficult. The starting point is staggered based on the child's age so that typically fewer than 50 items are given to any one child. The EOWPVT is widely used in early childhood and family literacy programs for evaluating progress.

The EOWPVT data are expressed in standard score units. EOWPVT scores have a standard score mean of 100 and a standard deviation of 15. Like the PPVT, our expectation is that the EOWPVT standard scores should not change in the absence of a "treatment."

The Dynamic Indicators of Basic Early Literacy Skills (DIBELS). The DIBELS is a set of standardized, individually administered measures of early literacy development. They are designed to be short (one minute) fluency measures used to regularly monitor the development of pre-reading and early reading skills. The results can be used to evaluate individual student development as well as provide grade-level feedback toward validated instructional objectives.

The kindergarten DIBELS measures were designed to assess Phonological Awareness and Alphabetic Principle, as described below.

Measures of Phonological Awareness:

- *Initial Sounds Fluency (LNF):* Assesses a child's skill to identify and produce the initial sound of a given word.
- *Letter Naming Fluency (LNF):* Assesses a child's skill to identify lower case letters.
- *Phonemic Segmentation Fluency (PSF):* Assesses a child's skill to produce the individual sounds within a given word.

Measure of Alphabetic Principle:

- *Nonsense Word Fluency (NWF):* Assesses a child's knowledge of letter-sound correspondences as well their ability to blend letters together to form unfamiliar "nonsense" (e.g., fik, lig, etc.) words.

The grade 2 DIBELS measures were specifically designed to assess Alphabetic Principle and Fluency with Connected Text, as described below.

Measure of Alphabetic Principle:

- *Nonsense Word Fluency (NWF):* Assesses a child's knowledge of letter-sound correspondences as well their ability to blend letters together to form unfamiliar "nonsense" (e.g., fik, lig, etc.) words.

Measure of Fluency with Connected Text:

- *Oral Reading Fluency (ORF):* Assesses a child's skill of reading connected text in grade-level material word.

The kindergarten and grade 2 DIBELS data are expressed in raw scores that show the number of items answered correctly. Although not a norm-referenced test, the DIBELS provides benchmark ranges for students based on when the test was administered, either in fall or in spring. For example, three common benchmarks are low risk, some risk, and at risk. The goals/benchmarks were developed following a large group of students over several years to see where students who were "readers" in later grades were performing on these critical early literacy skills when they were in kindergarten and grade 2. Teachers can then use the goals/benchmarks to make predictions about which students are progressing adequately and which students may need additional support.

Teacher Survey. The evaluator developed a survey[3] for teachers of the Cohort 1 and Cohort 3 students. The survey measured student learning and parent involvement. The survey asked teachers to respond to questions about three variables: student readiness to

3 The Cohort 1 and Cohort 3 Teacher Surveys use a Likert item to measure student readiness to enter the grade level and a Likert scale to measure performance in grade level. A Likert scale is a type of psychometric response scale often used in questionnaires. When responding to an item in a Likert scale, respondents are asked to indicate his or her degree of agreement with the statement or any kind of subjective or objective evaluation of the statement. Traditionally, Likert items use a five-point scale where the response levels are anchored with consecutive integers (1 through 5), and the response levels are also anchored with verbal labels which connote more-or-less evenly-spaced gradations (less than peers, a little less than peers, about the same as peers, a little better than peers, and better than peers).

enter the grade, performance during the school year, and parent involvement. Teachers completed the survey in April and May, 2007. (See Appendix B for a copy of the Cohort 1 and Cohort 3 Teacher Surveys.)

- *Student Readiness to Enter Grade Level*. The survey asked teachers to rate the ECE child(ren) in their classrooms, compared to other children in the classroom, on how prepared they were to enter the grade level using a 5 point scale as used commonly in research through a Likert Scale as described above. As requested in the Letter of Intent and for clarity purposes this report collapses the results into 3 categories: (1) less prepared, (2) equally prepared, and (3) better prepared than other children in the classroom.
- *Performance in Grade Level*. The survey asked teachers to rate the ECE child(ren) in their classrooms, compared to other children in the classroom, on the student's current level of performance on eight skills using the same 5 point Likert Scale commonly used in research which were also collapsed into 3 categories for reporting purposes and clarity. Four of the eight skills were grade level (kindergarten and grade 2) benchmarks for the same four Nevada content standards. The other four skills are the same four socio-emotional development skills taken from studies of teachers who identified these skills as important for early school success.
- *Parent Involvement*. The research overwhelmingly demonstrates that parent involvement in children's learning is positively related to achievement. Perhaps because of this strong research base, all Nevada ECE projects are required to have a parenting program that emphasizes parents and children spending time together.

  A challenge that the longitudinal evaluation faced in trying to assess parent involvement is to select an appropriate longitudinal measure[4] that can be easily collected across the large number of schools that Nevada ECE students attend. The only existing parent involvement measure that Nevada schools currently collect and that can be easily collected across a large number of schools is parent attendance at parent/teacher conferences. The evaluation decided to use parent/teacher conference attendance rate to measure the parent involvement of the Nevada ECE parents in their children's education compared to the parent/teacher conferences rates of all parents at the schools attended by the Nevada ECE children, available in the Nevada School Accountability Reports annually. Specifically, the survey asked teachers whether the parents of the ECE child(ren) participated in the fall parent/teacher conference at the school.

4 The evaluation did not use the measures that Nevada ECE projects employ to assess parent involvement (parenting goals, reading time, and meaningful time spent with children) because it would be difficult to separate the effects of school parent involvement activities from those of the Nevada ECE program.

Student Attendance. The evaluation collected information on student attendance for Nevada ECE students and classmates. A target of any school is to have high student attendance at school so students have the opportunity to learn. In fact, student average daily attendance (ADA) is a criterion Nevada uses for school accountability. While this longitudinal study did not collect data on student ADA as it is defined in Nevada State Statute, the study did collect data on the percent of days that Nevada ECE children and their classmates attended school compared to the days they were enrolled in school. The evaluation obtained the data from the Nevada State Student Information System.

Chapter III. Cohort 1 Results in Grade 2

This chapter presents the results for Cohort 1 students who participated in the Nevada ECE program in 2003-04 and attended grade 2 for 2006-07. As mentioned previously, the evaluation of the Cohort 1 students relies on the use of a *comparison group posttest only research design*.

Results from the comparison group posttest only design

As mentioned previously, in a *comparison group posttest only design,* the performance of a group of students is compared to another group of students after the program ends. In this case, the performance of Cohort 1 students are compared to samples of their grade 2 classmates on three instruments or measures (teacher survey, DIBELS assessment, and days enrolled/days attended) to assess student learning, parent involvement, and student attendance.

In all, the evaluation located 648 of the 844 four-year old Cohort 1 children (77 percent) who participated in the Nevada ECE program in 2003-04. Presumably, the 196 students who were not located either moved out of state or attended private schools. The number of children available for each of the three measures listed above differs because different groups of children had data for the measures.

Cohort 1 Teacher Survey Results

The teacher survey collected information from the grade 2 teachers of Cohort 1 students on three variables: grade 2 readiness, grade 2 performance, and parent involvement. Out of the 648 Cohort 1 students that Nevada ECE project staff located in grade 2, Nevada ECE project staff collected surveys on 390 children, or 60 percent of available students. The data from the teacher survey are descriptive, no statistical tests of significance can be conducted with the data because there is no comparison group with data.

To determine if the 390 Cohort 1 students are representative of the larger Cohort population, Table 3 shows the gender, ethnicity, and Limited English Proficient (LEP) status of

the two groups. The results show only slight variations between the two populations: the sample of Cohort 1 students is representative of the larger Cohort 1 population.

Table 3. Characteristics of Cohort 1 Population and Sample of Cohort 1 Students

Characteristics	Cohort 1 Population (n=844)	Sample of Cohort 1 Students (n=390)
Gender		
▪ Male	421 (49.9%)	196 (50%)
▪ Female	423 (50.1%)	194 (50%)
Ethnicity		
▪ Asian/Pacific Islander	33 (3.9%)	16 (4%)
▪ American Indian	9 (1.1%)	7 (2%)
▪ Hispanic	483 (57.2%)	212 (54%)
▪ African American	45 (5.3%)	21 (5%)
▪ White	256 (30.4%)	122 (31%)
▪ Other	18 (2.1%)	6 (3%)
Limited English Proficient	421 (49.9%)	213 (55%)

Grade 2 Readiness. A purpose of the evaluation was to determine how well prepared the Cohort 1 children were to enter grade 2 compared to classmates. If the children did not attend the Nevada ECE program, the expectation would be that there would be little difference between how teachers rated Cohort 1 children and classmates.

As described in Chapter II and shown in Table 4, the survey asked teachers to rate the performance of Cohort 1 children compared to classmates on a five-point Likert item. The item was completed by 361 of the 390 grade 2 teachers who submitted a survey.

The results show that 75 percent of the teachers (272 of 361) who responded to the item thought the Cohort 1 children were "better prepared" to "equally prepared" to start grade 2 than classmates. The largest number of teachers (169) reported that the children were "better prepared" followed closely by 103 teachers who reported that the children were "equally prepared." The survey results suggest that Cohort 1 children were able to maintain much of the gains that they had made three years ago in 2003-04 during preschool as they entered grade 2 in 2006-07, consistent with the evaluation expectation.

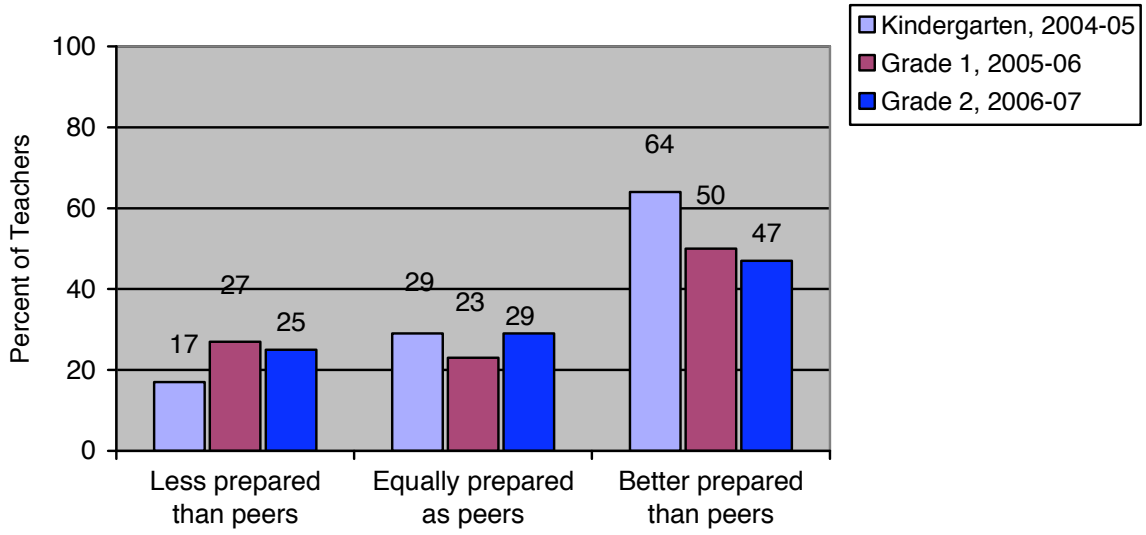
Table 4. Teacher Ratings of Cohort 1 Children on Grade 2 Readiness

Number of teachers (percent)	**Among children in your class this year, would you say that CHILD'S NAME was—** (n=361)
169 (47%)	Better prepared than peers to start school ready to succeed
103 (29%)	Equally prepared
89 (24%)	Less prepared than peers to start school ready to succeed

These grade 2 teacher survey results are similar, but not quite as positive as the results for a sample of Cohort 1 students on a grade 1 teacher survey in 2005-06 and a random sample of Cohort 1 students on a kindergarten survey in 2004-05, as shown in Figure 1. The results must be interpreted with some caution because the samples of students from kindergarten to grade 2, while overlapping, are not a matched group of students.

The results show that 83 percent of the kindergarten teachers and 73 percent of the grade 1 teachers (compared to 75 percent of the grade 2 teachers) thought that the Cohort 1 children were "better prepared" to "equally prepared" to start school at the given grade level than classmates. The results suggest grade 2 teachers still perceived that the Cohort 1 children were better prepared to enter grade 2 in fall of the school year compared to their classroom peers as they were when they entered school in grade 1 in 2004-05.

Figure 1. Teacher Ratings of Cohort 1 Children on Grade-Level Readiness, Kindergarten to Grade 2



Grade 2 Performance. Another purpose of the evaluation was to determine whether Cohort 1 students performed in grade 2 as well as their classmates. As shown in Table 5, the survey asked teachers to rate the Cohort 1 students' current level of performance on eight grade 2 skills compared to classmates, using a five-point Likert scale. Four of the eight skills on the survey are academic skills based on the same state content standards assessed on the kindergarten and grade 1 teacher surveys. The other four items on the survey are the same socio-emotional development skills on the kindergarten and grade 1 teacher surveys. The number of teachers who completed each item of this question ranged from 385 to 390 teachers.

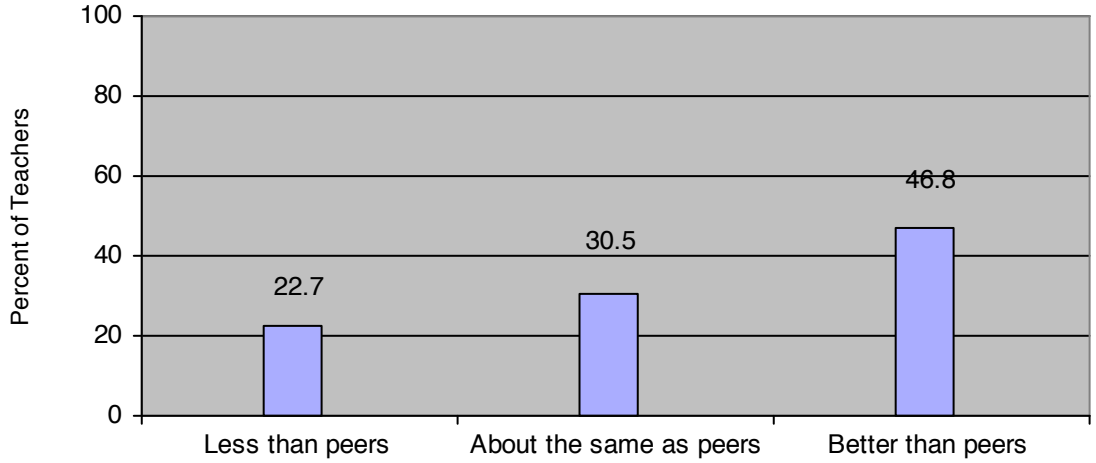
The results show, on average, teachers perceived Cohort 1 children performed from a "3" (about the same as peers) to a "4 or 5" (better than peers) on all eight items in the survey, with average scores ranging from a 3.0 to a 3.8. Cohort 1 children scored highest on a social-emotional development item (Gets along with other children) at 3.7, and overall, performed better on the social-emotional development than the academic items.

Table 5. Teacher Ratings of Cohort 1 Children on Grade 2 Skills

Grade 2 Skills	Number of Teachers Who Marked			Average Rating
	Less than peers (1-2)	About the same as peers (3)	Better than peers (4-5)	
a. Use knowledge of phonics and structural elements (e.g., syllables, basic prefixes, roots, and suffixes) to decode unfamiliar words of one or more syllables in context.	106	113	169	3.3
b. Write stories and poems.	138	103	146	3.0
c. Follows two-step oral directions to complete a task.	73	136	177	3.5
d. Use the patterns in numbers to skip count.	65	134	188	3.5
Subtotal Academic Skills	**382**	**486**	**680**	**3.31**
e. Pays attention in class	96	110	182	3.4
f. Is well-behaved in the class	70	106	213	3.6
g. Gets along with other children	51	137	201	3.7
h. Has problem-solving skills	104	105	176	3.4
Subtotal Socio-Emotional Skills	**321**	**458**	**772**	**3.50**
Total Across Items	**702**	**944**	**1452**	**3.41**
Percent of Teachers Across Items	**22.7%**	**30.5 %**	**46.8%**	**100%**

Figure 2 presents the data from Table 5 on the percent of teacher responses across all eight items in a graph. The results show that 77 percent of teachers rated Cohort 1 children as performing 'as well as' or 'better than' their peers on the eight skills. The survey results suggest that the Cohort 1 children, while in grade 2 in 2006-07, maintained much of their improved level of performance that they had achieved in preschool.

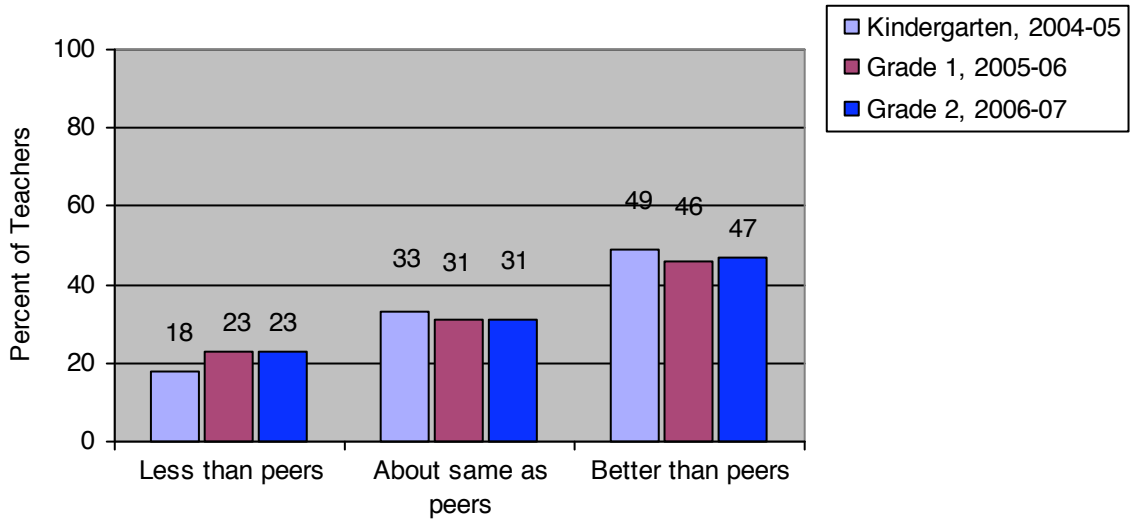
Figure 2. Percent of Teacher Ratings of Cohort 1 Children on Grade 2 Skills



These grade 2 teacher survey results are very similar to the results for a sample of Cohort 1 students on a grade 1 teacher survey in 2005-06 and a random sample of Cohort 1 students on a kindergarten teacher survey in 2004-05, as shown in Figure 3. The results must be interpreted with some caution because the samples of students from kindergarten to grade 2, while overlapping, are not a matched group of students.

The results show that 82 percent of the kindergarten teachers and 77 percent of grade 1 teachers (compared to 77 percent of the grade 2 teachers) thought that the Cohort 1 children performed "about the same as their peers" to "better than their peers" on the eight skills. The results suggest grade 2 teachers perceived that the Cohort 1 children essentially maintained almost all of the gains that they had made three years ago in 2003-04 during preschool through grade 2 in 2006-07.

Figure 3. Teacher Ratings of Cohort 1 on Grade-Level Performance, Kindergarten to Grade 2



Parent Involvement. Another purpose of the longitudinal evaluation is to determine the level of involvement of the parents of the Cohort 1 children in their child's education, as measured by attendance at parent/teacher conferences.

The evaluation did not establish expectations for the parent/teacher conference attendance rate, because there is no existing research to set appropriate expectations on the relationship between preschool parent involvement activities and attendance at school parent/teacher conferences. However, the data from the two previous longitudinal evaluations of the Nevada ECE program have shown that the parents of Nevada ECE children attend parent/teacher conferences at a rate higher than did the parents of other students at the schools. These previous results suggest that perhaps the activities that Nevada ECE projects conducted to promote parent involvement in their child's preschool education carried over into kindergarten.

The grade 2 teacher survey asked teachers if the parents of Cohort 1 students participated in the fall parent/teacher conference. Out of the 390 teachers who completed the survey, 373 teachers responded to the question. Out of the 373 teachers who completed this item on the survey, 349 teachers (93.6 percent) reported that the parents of the Nevada ECE children attended the parent/teacher conference.

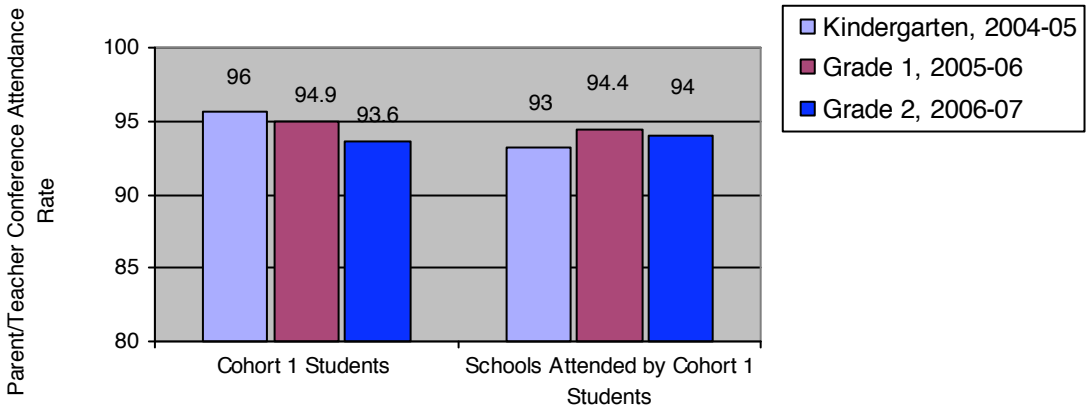
For comparison, the evaluation calculated the average percent of parents who attended parent/teacher conferences at the same schools that the sample of Cohort 1 children attended.[5] The Cohort 1 children attended 127 elementary schools; however, many schools enrolled just one or two Cohort 1 children. Instead of gathering data on all 89 schools, and perhaps diminish the likelihood of finding a valid comparison group because the larger number of schools may not include similar students, the evaluator elected to collect data on only schools that enrolled at least four students from the Cohort 1 sample as representative of the larger Cohort 1 population. The evaluation found that 30 schools enrolled at least four Nevada ECE students in grade 2 in 2006-07. In fact, the 30 schools enrolled a total of 232 of the 373 students for whom teachers completed surveys, or 62 percent. The rates of attendance at parent/teacher conferences for the 30 elementary schools ranged from 81 percent to 100 percent, with a weighted average of 94.0 percent. In other words, the parents of Nevada ECE children attended parent/teacher conferences in grade 2 at a rate about the same as did the parents of other students at the schools.

The parent/teacher conference rates reported on the grade 2 teacher survey results are different from the parent/teacher conference rates for a sample of Cohort 1 students on a grade 1 teacher survey in 2005-06 and for a random sample of Cohort 1 students on a kindergarten survey in 2004-05, as shown in Figure 4. The results must be interpreted with some caution because the samples of students from kindergarten to grade 2, while overlapping, are <u>not</u> a matched group of students.

The results show, in the two previous years, the parents of the Cohort 1 children attended parent/teacher conferences at rates slightly higher than or equal to the parents of other students at the schools. The results suggest that the involvement of Cohort 1 parents in their child's education may be slightly lower than the two previous years, but still within the range of expected fluctuations relative to the parents of classmates from kindergarten and grade 1 into grade 2.

5. The school parent/teacher conference rate is based on data from all grade levels at the schools rather than just kindergarten. Individual grade level data are not available.

Figure 4. Parent/Teacher Conference Attendance Rates of Cohort 1 Students and Schools, 2004-05 to 2006-07



Cohort 1 Dynamic Indicators of Basic Early Literacy Skills (DIBELS) Results

The second analysis of data using a *comparison group posttest only design* examines student scores on the DIBELS. In this case, the evaluation compares the DIBELS scores from Cohort 1 students with the results from classmates. The same limitations of this analysis apply as before as there are no required assessments for students in Grades 1 and 2. Therefore, a statewide common achievement measure was not available. Student achievement data collected from the DIBELS was limited due to the lack of a consistent measure. More consistent measures will be available regarding student achievement next year after Cohort 3 enters Grade 3. At this time, this indicator will be more fully addressed next year with more reliable and consistent Grade 3 CRT data.

Given the limitations described above, DIBELS data are available for 89 (10 percent) of the 884 Cohort 1 students who entered grade 2 at one of the Nevada Reading First programs in 2006-07, a relatively small sample of students.[6] The comparison group includes 2,031 grade 2 students who were in the same schools as the 89 Nevada ECE children. From the 2,031 students in the comparison group, the evaluator selected a stratified random sample of 89 students based on school attended.

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6 The DIBELS was also administered to students at Nevada Reading First schools when the Cohort 1 students were in grade 1, and the results are reported in the *2005-06 Nevada ECE Longitudinal Evaluation Report*. The grade 1 results showed that Cohort 1 students did as well as a group of comparison students. The evaluation does not compare the performance of Cohort 1 students on the DIBELS from grade 1 to grade 2 because the subtests are largely different for the two grade levels and because of the small number of students with test scores.

Table 6 shows the characteristics of the Cohort 1 children and the sample of classmates on age, Free and Reduced Lunch rate, Limited English Proficiency (LEP), and ethnicity. The results show the two populations are comparable on all four characteristics.

Table 6. Characteristics of Cohort 1 Students and Classmates

Children Characteristics	Cohort 1 Students (n=89)	Classmates of Cohort 1 Students (n=89)
Age	7.5 years	7.5 years
Free/Reduced Lunch	55 (77.5%)	60 (78.9%)
Limited English Proficient	39 (55.7%)	34 (51.5%)
Ethnicity		
▪ Asian/Pacific Islander	6 (6.7%)	5 (5.8%)
▪ American Indian	1 (1.5%	1 (1.2%)
▪ Hispanic	50 (57.5%)	49 (56.3%)
▪ African American	9 (10.3%)	9 (10.3)
▪ White	21 (24.1%)	23 (26.4%)
▪ Other	0 (0%)	0 (0%)

Table 7 presents the average scores for the Cohort 1 children and the sample of classmates on each subtest of the DIBELS administered in fall 2006 and spring 2007. The number of students who had test scores in fall and spring are a little different because of student mobility: some students were present in the fall but left during the school year before spring testing and some students entered the school after fall testing and participated in spring testing.

Additional limitations of not having a statewide required assessment for these grade levels for this analysis include: 1) The evaluator elected to take a sample, based on ethnicity, because the larger group of classmates was not comparable to the Nevada ECE group in terms of ethnicity, LEP, and Free and Reduced Lunch (FRL). However, the file that contained the data on the characteristics of the students did not have complete data on all students. As a result, the number of students reflected in Table 6 is less than the total sample sizes for both groups. For example, data on FRL are available for 66 of the 80 students in

the ECE group. The percentages, thus, are determined based on the number of students with data; 2) The sample of Cohort children that took the DIBELS may not be representative of the larger Cohort 1 population from 2003-04. Although the two populations are comparable in terms of ethnicity, the total Cohort 1 population had smaller percents of LEP and FRL students, and 3) As a result, the fall and spring results for the two groups are based on slightly different samples of students and test score differences between fall and spring may, in part, be due to differences between the samples of students.

Table 7. Average Scores on the DIBELS Subtests

Subtest	**Nevada ECE[7]**		**Random Selection of Classmates**	
	Fall 2006 (n=77)	**Spring 2007 (n=76)**	**Fall 2006 (n=59)**	**Spring 2007 (n=68)**
Nonsense Word Fluency	57.4		59.3	
Oral Reading Fluency	43.5	87.8	50.8	92.0

The results show that Cohort 1 students had comparable average scores to their classmates when they entered grade 2 in fall 2006 on Nonsense Word Fluency, but slightly lower averages on Oral Reading Fluency. Neither of the differences between the averages of the Nevada ECE children and their classmates are significant, $p \leq .05$.

By spring 2007, Nevada ECE students continued to perform slightly below their peers on Oral Reading Fluency. The difference between the means of the Nevada ECE children and the students in the sample is not significant, $p \leq .05$, and could be attributed to chance or error.

Interpretation of the results must take into consideration all limitations of statewide data available. The overall results suggest that the Cohort 1 students were as prepared or slightly less prepared to enter grade 2 than a comparable group of their classroom peers. This slight difference in the results is not statistically significant and could be attributed to chance or error. A possible explanation for the slight difference in performance is that

7 The number of students with test scores for any given subtest is less tan the total number of students for the ECE and Classmates groups because of student mobility.

the sample of Cohort 1 students that took the DIBELS is not very representative of the larger Cohort 1 population. As explained, the total Cohort 1 population had smaller percents of Limited English Proficient and Free and Reduced Lunch students than the DIBELS Cohort 1 sample. In addition, the small sample of Cohort 1 students with DIBELS scores represents just 10 percent of the Cohort 1 population, increasing the likelihood the subpopulation data may not accurately reflect the performance of the larger Cohort 1 population.

A second possible explanation is that many students appear to have "topped-out" on the assessment. That is, the DIBELS assessment is a criterion-referenced test that assesses whether students typically meet three pre-established benchmarks on each subtest, such as low risk, some risk, and at risk. In this analysis, four of the six average scores for the Cohort 1 students and classmates in Table 7 were above the highest benchmark on the subtests, indicating that some students may have topped out on the test. For example, the raw score for the highest benchmark for Nonsense Word Fluency is 50, and the two groups had average scores on the subtest of 57 and 59. In other words, because the students may have been able to score higher if the test had a higher ceiling, the results may not accurately represent the performance of both groups.

Cohort 1 Student Attendance Results

The third analysis of data using a *comparison group posttest only design* examines the performance of Cohort 1 students and a sample of classmates on student attendance rate. The evaluation did not specify an expectation for the student attendance rates of Cohort 3 students as compared to classmates. In fact, the results from the previous two years of longitudinal data are mixed: Cohort 1 students had the same attendance rate as classmates in 2004-05 and a higher rate than classmates in 2005-06.

Data are available for 465 Cohort 1 children and 18,511 of their classmates. From the 18,511 students in the comparison group, the evaluator selected a stratified random sample of 465 students, based on ethnicity.[8]

8 The evaluator elected to take a random sample because the larger group of classmates was not comparable to the Cohort 1 students in terms of ethnicity and LEP.

Table 8 shows the characteristics of the two populations on Limited English Proficiency, participation in the Free and Reduced Lunch Program, and ethnicity. The results show that the two populations are comparable.[9]

Table 8. Characteristics of Cohort 1 Students and Classmates

Characteristics	Cohort 1 Students (n=465)	Sample of Cohort 1 Classmates (n=465)
Limited English Proficiency	215 (46.2%)	199 (42.8%)
Free and Reduced Lunch Program	285 (61.2%)	275 (59.1%)
Ethnicity		
▪ Asian/Pacific Islander	22 (4.7%)	22 (4.7%)
▪ American Indian	3 (0.6%)	3 (0.6%)
▪ Hispanic	278 (59.8%)	278 (59.8%)
▪ African American	30 (6.5%)	30 (6.5%)
▪ White	132 (28.4%)	132 (28.4%)

Table 9 shows the percent of "days attended" to "days enrolled" for Cohort 1 children and their classmates. The results show that Cohort 1 children attended school in grade 2 at a slightly lower rate than their classmates. To interpret the meaning of the difference, the evaluation calculated an "effect size."[10] In this case, the effect size was small—a standard deviation of 0.33 as compared to the effect of other programs, suggesting just a small difference between the attendance rates of Cohort 1 students with their classmates.

Table 9. Attendance Rate of Cohort 1 Students and Classmates

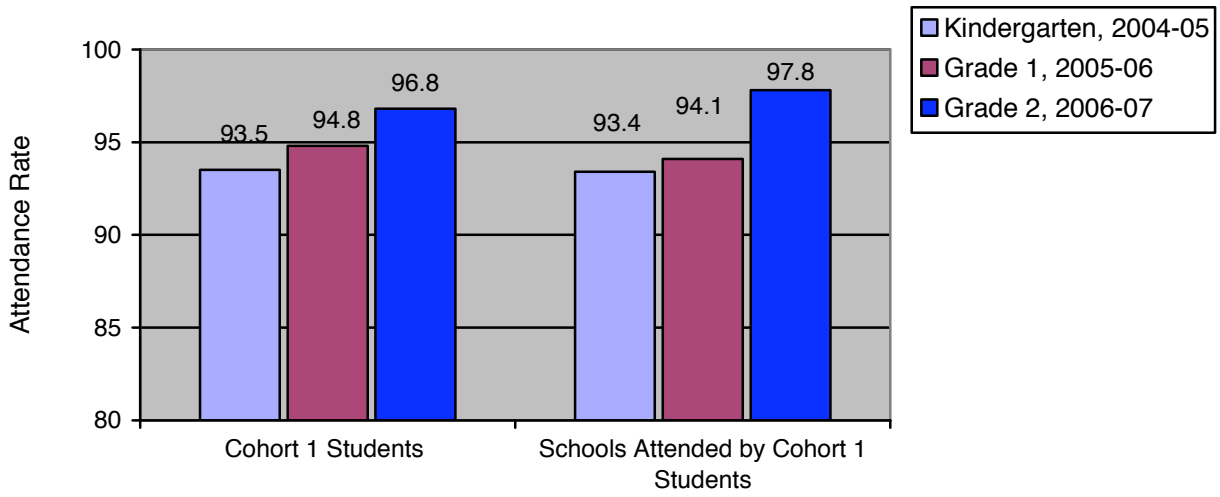
Cohort 1 Students (n=465)	Sample of Cohort 1 Classmates (n=465)
96.8	97.8

9 Given the large number of Cohort 1 children in the sample, they are fairly representative of the larger Cohort 1 population.

10 Effect size is a type of standard score. It is found by dividing the difference between experimental and control group means divided by the standard deviation of the control group. It would then represent, in standard score terms, the superiority of the average person in the treated group over the untreated group. To help interpret the meaning of effect sizes: 1.0 is considered large, .5 considered medium, and .2 considered small.

The evaluation then compared these grade 2 results to the results when the Cohort 1 students were in kindergarten in 2004-05 and in grade 1 in 2005-06, as shown in Figure 5. The results show that the attendance rate of Cohort 1 students increased from kindergarten at 93.5 percent to grade 2 at 96.8 percent. However, the attendance rate of the classmate also increased over the same time period. In other words, the attendance rate of Cohort 1 students has increased and has remained comparable to the attendance rates of classmates from kindergarten through grade 2.

Figure 5. Attendance Rates of Cohort 1 Students and Schools, 2004-05 to 2006-07



Chapter IV. Cohort 3 Results in Kindergarten

This chapter presents the results for Cohort 3 students who participated in the Nevada ECE program in 2005-06 and attended kindergarten in 2006-07. Data are presented on two research designs: a *one group pretest/posttest design* and a *comparison group post-test only design*. As explained earlier, the results from the *one group pretest/posttest design* are different from the design used for Cohort 1 due to a different test that was used to measure student learning when the Cohort 1 children were in preschool.

Results from one group pretest/posttest design

As mentioned previously, in a *one group pretest/posttest design,* a group of students is tested prior to participation in a program and tested again after the program to measure the program's impact. In this case, a random sample of 300 Cohort 3 children received three administrations of the PPVT and EOWPVT—in fall 2005 prior to their participation in Nevada ECE, in spring 2006 at the end of their participation, and again in spring 2007 when they were in kindergarten as a follow-up measure.

The evaluation initially selected a stratified random sample of 300 of the 944 four-year old Cohort 3 children, based on the number of children in the 10 projects. With the help of Nevada ECE project staff, the evaluation team located 294 of these 300 students in kindergarten. The status of the six students who were not found was unknown. Most likely, these children had moved out of the school district or chose to attend a private school. The evaluation team replaced these six students with a random sample of remaining students at the appropriate project sites.

Out of the 300 students selected in the Nevada ECE sample, the evaluation tested 297 students, or 99 percent. Three students were not at school on the scheduled testing days. The 297 students are representative of the larger population of 944 Cohort 3 students, as shown in Table 10, in terms of gender, ethnicity, and the level of English language skills as determined by project staff. The results show only minor variations between the two populations, suggesting that the results obtained from the random sample of Cohort 3 students can be generalized to the larger Cohort 3 population.

Table 10. Characteristics of Cohort 3 Population and Sample of Cohort 3 Students

Characteristics	Cohort 3 Population (n=944)	Sample of Cohort 3 Students (n=297)
Gender		
▪ Male	480 (50.9%)	159 (53.5%)
▪ Female	464 (49.1%)	138 (46.5%)
Ethnicity		
▪ Asian/Pacific Islander	42 (4.5%)	13 (4.4%)
▪ American Indian	12 (1.3%)	5 (1.7%)
▪ Hispanic	583 (61.8%)	165 (55.6%)
▪ African American	33 (3.5%)	12 (4.0%)
▪ White	252 (26.7%)	94 (31.7%)
▪ Other	22 (2.3%)	8 (2.7%)
Limited English Language Skills	412 (43.6%)	121 (40.7%)

Peabody Picture Vocabulary Test & Expressive One Word Picture Vocabulary Test

Figures 6 and 7 show the mean standard scores of the 297 Cohort 3 students for the three test administrations of the PPVT and EOWPVT. The general expectation of the evaluation is that Cohort 3 students would maintain the significant learning gains they made in preschool into their K-12 school career. In this case, the expectation is that the Cohort 3 children would obtain similar standard scores in spring 2007 as they had achieved in spring 2006.

The results show that Cohort 3 students made significant learning gains in auditory comprehension and expressive communication while in preschool. Then, Cohort 3 students maintained their level of performance that they had achieved in preschool through their kindergarten school year.

Figure 6. PPVT Standard Score Means of Cohort 3 in Preschool and Kindergarten

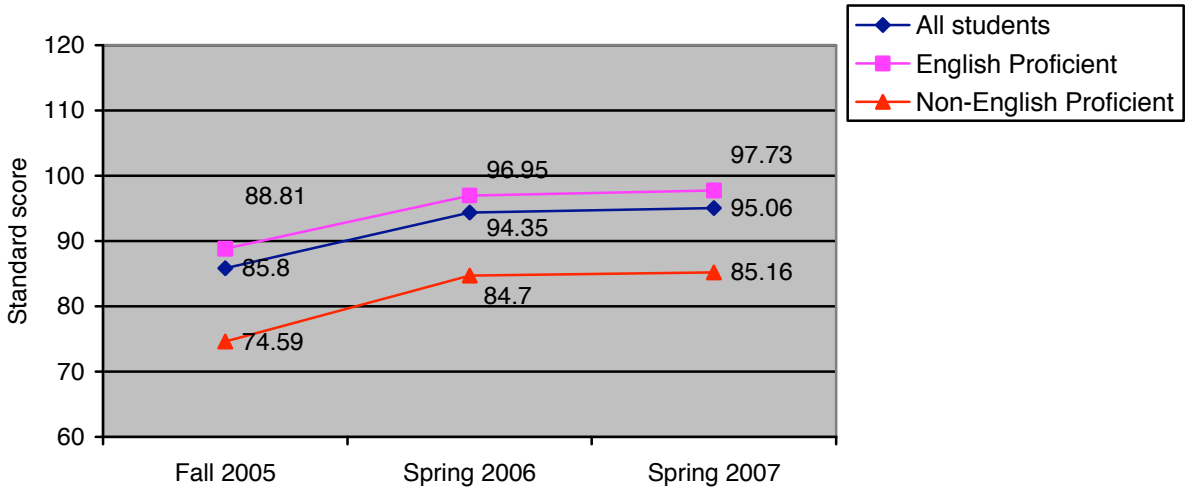


Figure 7. EOWPVT Standard Score Means of Cohort 3 in Preschool and Kindergarten

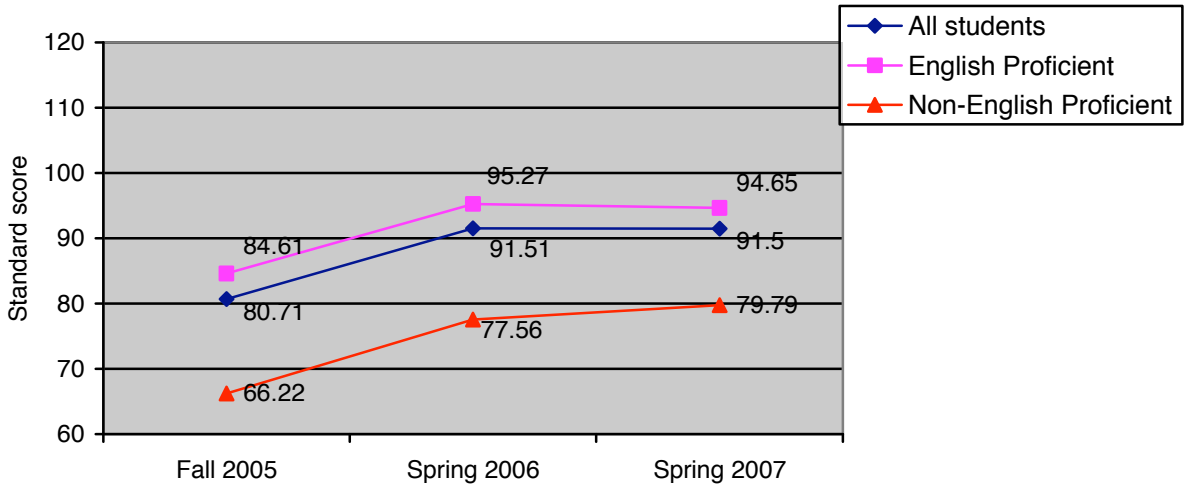


Table 11 presents the same average standard scores in Figures 6 and 7 as well as the standard score average gains for two time periods: from fall 2005 when Cohort 3 children enrolled into the Nevada ECE program until the end of the program year in spring 2006, and from the end of the Nevada ECE program in spring 2006 until the follow-up test at the end of kindergarten in spring 2007.

Table 11. PPVT and EOWPVT Standard Score Averages and Average Gains of Cohort 3 in Preschool and Kindergarten, by English Skills

Group (n)/Subtest	Average Standard Scores			Average Gains	
	Fall 2005 Average	Spring 2006 Average	Spring 2007 Average	Fall 2005 to Spring 2006 Average Gain	Spring 2006 to Spring 2007 Average Gain
All Students (n=297)					
▪ PPVT (Receptive)	85.80	94.35	95.06	8.55*	.71
▪ EOWPVT (Expressive)	80.71	91.51	91.50	10.80*	-.01
English Speaking Students (n=234)					
▪ PPVT (Receptive)	88.81	96.95	97.73	8.14*	.78
▪ EOWPVT (Expressive)	84.61	95.27	94.65	10.66*	-.62
No English Skills at Enrollment Students (n=63)					
▪ PPVT (Receptive)	74.59	84.70	85.16	10.11*	.46
▪ EOWPVT (Expressive)	66.22	77.56	79.79	11.34*	2.23

* Significant at $p \leq .01$
** Significant at $p \leq .05$

Analysis of Cohort 3 Results

Overall, the standard score averages show that Cohort 3 children scored well below the national average before they entered the Nevada ECE program in fall 2005: at the 17th percentile in receptive vocabulary (PPVT) and at the 10th percentile in expressive vocabulary (EOWPVT). In other words, these students' scores were consistent with an "at risk" student population. By the end of the program in spring 2006, students made gains, improving to the 35th percentile in receptive vocabulary (PPVT) and 28th percentile in expressive vocabulary (EOWPVT). While still below the national average of the 50th percentile, these students decreased the achievement gap with the national norming sample in the two areas. Finally, by the end of their kindergarten school year in spring 2007, students scored the same or higher than in spring 2006 at the end of preschool, at the 37th percentile in receptive vocabulary (PPVT) and 28th percentile in expressive vocabulary (EOWPVT). In other words, the Cohort 3 students maintained their level of performance that they had achieved at the end of their preschool experience through their kindergarten school year, consistent with evaluation expectations.

Fall 2005—Spring 2006. The results show that Cohort 3 children[11] made learning gains during the time they participated in the preschool program: 8.6 standard score points in receptive vocabulary (PPVT) and 10.8 standard score points in expressive vocabulary (EOWPVT), $p \leq .01$. Because these children started the program well below the national average, these children closed much of the achievement gap with the norming group.

Posttest 2006 – Follow-up 2007. The results show that the Cohort 3 sample maintained their relative position with the norming populations from the time they exited the preschool program in spring 2006 to the time they were administered a follow-up test during

[11] The gains of this Cohort 3 sample in preschool are similar to the gains that all Cohort 3 children made, as reported in the *2005-06 Nevada ECE Annual Evaluation Report*. All Cohort 3 children made a gain of 8.7 standard score points in receptive vocabulary (PPVT) and 11.3 standard score points in expressive vocabulary (EOWPVT) in 2005-06. In other words, the random sample of Cohort 3 children in the study had gains during 2005-06 representative of all children in the program, suggesting that other results from this Cohort 3 sample can be generalized to the larger Cohort 3 population.

kindergarten in spring 2007. That is, the Cohort 3 sample showed an increase of 0.7 standard score points in receptive vocabulary (PPVT) and no increase of standard score points in expressive vocabulary (EOWPVT). Neither difference is significant, $p < .05$. The results suggest that the ECE children maintained their level of performance that they had achieved in preschool through their kindergarten school year, benefiting as much from kindergarten as similar children in the norming sample.

English Speaking Students and Students with No English Skills at Enrollment. The evaluation conducted an analysis to determine the gains of children in the Cohort 3 sample who did not have sufficient English to take the PPVT or EOWPVT when they entered the preschool program.[12] Out of the 297 students in the Cohort 3 sample, 63 students did not have sufficient English to take the PPVT or EOWPVT at the time of their enrollment and 234 students had sufficient English.

Table 11 presents the average standard scores and gains for these two groups of students. The results indicate that the Cohort 3 children in the sample who were non-English speaking when they entered the preschool program made significant gains during preschool from fall 2005 to spring 2006: 10.1 standard score points in receptive vocabulary (PPVT) and 11.3 standard score points in expressive vocabulary (EOWPVT), $p \leq .01$. The gains of the non-English speaking students are above the gains of the English speaking students in receptive vocabulary and expressive vocabulary.

Perhaps more importantly, while the English speaking sample of students made gains in receptive vocabulary and in expressive vocabulary equal to the norming population from the time that they exited the preschool program in spring 2006 to the time they were administered the follow-up test in spring 2007, the non-English speaking sample showed a slight increase in both receptive and expressive vocabulary. In addition, the gains that the non-English speaking students made in expressive vocabulary approached significance, $p \leq .01$. These results suggest that students who did not speak English at enrollment in the

12 The annual evaluation of the Nevada ECE program in 2006-07 determined that 390 of the 1,073 four-year old Nevada ECE students (36 percent) did not have sufficient English language proficiency at enrollment into the program to take the PPVT and EOWPVT. In these cases, projects waited to test these children until project staff determined the child had sufficient English skills to take the PPVT and EOWPVT.

Nevada ECE program may have benefited more than the English speaking students from participation in the Nevada ECE Program.

Results from the comparison group posttest only design

As mentioned previously, in a *comparison group posttest only design,* the performance of a group of students is compared to another group of students after the program ends. In this case, the performance of Cohort 3 students is compared to their kindergarten classmates on three instruments or measures (teachers surveys, the DIBELS assessment, and days enrolled/days attended) to assess student learning, parent involvement, and student attendance.

Cohort 3 Teacher Survey Results

The teacher survey collected information from the kindergarten teachers for the same Cohort 3 children administered the PPVT and EOWPVT on three variables: kindergarten readiness, kindergarten performance, and parent involvement. Out of the 297 children who were tested, 296 kindergarten teachers completed a survey. As mentioned previously, the data from the teacher survey are descriptive, statistical tests of significance cannot be conducted with the data because there is no comparison group with data.

Kindergarten Readiness. A purpose of the evaluation was to determine how well prepared the Cohort 3 children were to enter kindergarten compared to their classmates. As described in Chapter II and shown in Table12, the survey asked teachers to rate the performance of Cohort 3 children as compared to classmates on a five-point Likert item. Out of the 296 teachers who completed a survey, 258 teachers completed this item.

Table 12 shows that 86 percent of the teachers (221 of 258) who responded to the item thought that the Cohort 3 children were "better prepared" to "equally prepared" to start kindergarten than classmates. In fact, the largest number of teachers reported that Cohort 3 children were "better prepared." Only 14 percent of the Cohort 3 children (or 37 children) were perceived as less prepared to start kindergarten than their classmates.

Table 12. Teacher Ratings of Cohort 3 Children on Kindergarten Readiness

Number of teachers (percent)	**Among children in your class this year, would you say that CHILD'S NAME was—** (n=258)
161 (63%)	Better prepared to start school ready to succeed
60 (23%)	Equally prepared
37 (14%)	Less prepared to start school ready to succeed

Kindergarten Performance. Another purpose of the evaluation was to determine whether Cohort 3 children performed in kindergarten as well as their classmates. As a result of attending the Nevada ECE program, the expectation is that the Cohort 3 children would be rated as performing equal to or better than their kindergarten classmates.

As shown in Table 13, the survey asked teachers to rate the Cohort 3 students' current level of performance on eight kindergarten skills compared to other classroom students, using a Likert scale commonly used in research. Data is collected using a 5-point Likert Scale and collapsed into 3 reporting groups in this report. As mentioned previously, four of the kindergarten skills on the survey (items "a" through "e") are academic skills and the other four items on the survey (items "e" through "h") are socio-emotional development skills. The number of teachers who completed each item of this question ranged from 294 to 296 teachers.

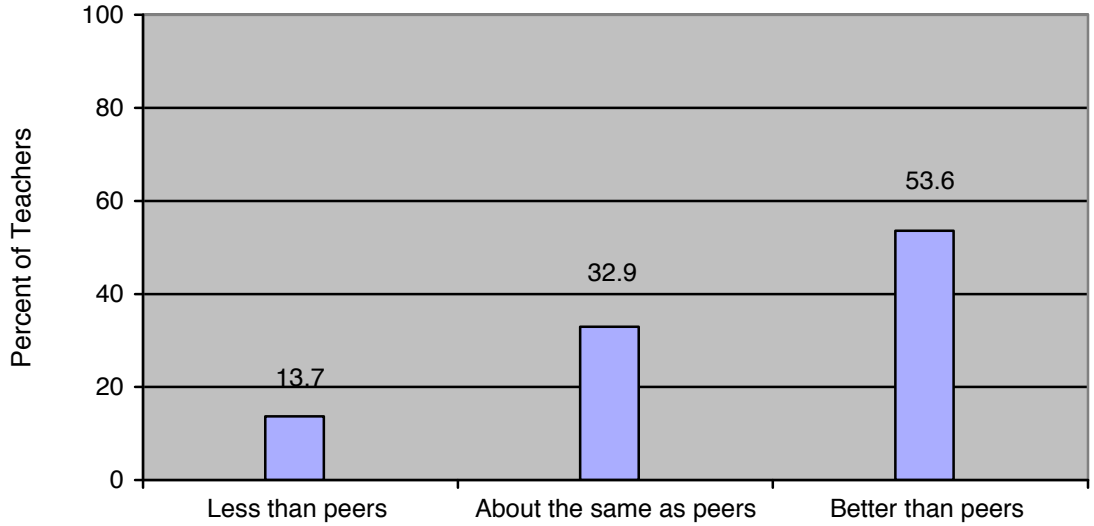
The results in Table 13 show, on average, teachers perceived that Cohort 3 children performed between a rating of "3" (about the same as their peers) to a rating of "4 or 5" (better than their peers) on all eight items in the survey, with average scores ranging from a 3.46 to a 3.82. Cohort 3 children scored highest on a math content standard item (Count to 20) at 3.82. However, overall, Cohort 3 children performed equally well on the social-emotional development and academic items.

Table 13. Teacher Ratings of Cohort 3 Children on Kindergarten Skills

Kindergarten Skills	Number of Teachers Who Marked			Aver-age Rating
	Less than peers (1-2)	About the same as peers (3)	Better than peers (4-5)	
a. Identify and use letter/sound relationships to identify some words	48	78	170	3.63
b. Draw or write, with teacher assistance, stories about familiar experiences and events	51	99	145	3.46
c. Listen to and follow oral directions	40	104	152	3.64
d. Count to 20	27	96	171	3.82
Subtotal Academic Skills	**166**	**377**	**638**	**3.63**
e. Pays attention in class	53	95	147	3.58
f. Is well-behaved in the class	36	93	167	3.73
g. Gets along with other children	21	116	159	3.79
h. Has problem-solving skills	47	97	151	3.58
Subtotal Socio-Emotional Skills	**157**	**401**	**624**	**3.67**
Total Number of Teachers Across Items	**323**	**778**	**1262**	**3.65**
Percent of Teachers Across Items	**13.7%**	**32.9 %**	**53.4%**	**100 %**

Figure 8 presents the data from Table 13 on the percent of teacher responses across all eight items in a graph. The results show that 86 percent of teachers rated Cohort 3 children as performing 'as well as' or 'better than' their peers on the eight skills. The survey results suggest that teachers thought Cohort 3 children, while in kindergarten in 2006-07, maintained their improved level of performance they had achieved in preschool.

Figure 8. Teacher Ratings of Cohort 3 Children on Kindergarten Skills



Parent Involvement. Another purpose of the longitudinal evaluation is to determine the level of involvement of the parents of the Cohort 3 children in their child's education. As explained earlier, the evaluation used parent/teacher conference attendance rate to measure parent involvement.

The survey asked teachers if the parents of Cohort 3 children participated in the fall parent/teacher conference. Out of 296 surveys, 279 teachers responded to this item: 17 teachers did not complete the item. Out of the 279 teachers, 270 teachers (96.8 percent) reported that the parents of the Cohort 3 children attended the parent/teacher conference.

For comparison, the evaluation calculated the average percent of parents who attended parent/teacher conferences at the same schools that the sample of Cohort 3 children attended. The Cohort 3 children attended 89 elementary schools; however, many schools enrolled just one or two Cohort 3 children. Instead of gathering data from all 89 schools, the evaluator elected to collect data on only schools that enrolled at least four students from the Cohort 3 sample as representative of the larger group of schools. The evaluation found that 21 schools enrolled at least four Cohort 3 students in kindergarten in 2006-07. In fact, the 21 schools enrolled a total of 166 of the 279 students for whom teachers completed surveys, or 59 percent. Data are available from 18 of the 21 schools: three schools

did not report parent/teacher conference rate numbers. The rates of attendance at parent/teacher conferences for the 18 elementary schools ranged from 85 percent to 99 percent, with a weighted average of 94.2 percent. In other words, the parents of Cohort 3 children attended parent/teacher conferences in kindergarten at a rate higher than did the parents of other students at the school.

In order to interpret the meaning of the differences between the Cohort 3 sample and the schools they attended, the evaluation calculated an "effect size" which researchers sometimes use to estimate the "value" of a difference. In this case, the effect size was medium—a standard deviation of 0.70 as compared to the effect of other programs, suggesting that the parents of Cohort 3 students attended parent/teacher conferences at a higher rate than other parents at the schools.

Cohort 3 Dynamic Indicators of Basic Early Literacy Skills (DIBELS) Results

The second analysis of data, using a *comparison group posttest only design,* examines student scores on the DIBELS. As mentioned previously, the evaluation collected some additional, but limited student achievement data from the administration of the DIBELS to students at schools participating in the Nevada Reading First programs. A word of caution: the results from an analysis using a *comparison group posttest only design* are not as meaningful as the results from an analysis using a *one group pretest/posttest design,* as used with the PPVT and EOWPVT data presented previously. This pre and post design provides comparative data which creates a stronger analysis.

DIBELS data are available for 80 (8 percent) of the 944 Cohort 3 students who entered kindergarten at one of the Nevada Reading First schools in 2006-07. The comparison group includes 1,841 students who were in the same kindergarten classes as the 80 Cohort 3 children. From the 1,841 students in the comparison group, the evaluator selected a stratified random sample of 80 students, based on school attended.

Table 14 shows characteristics of the two populations. The results suggest the two populations are comparable for age, ethnicity, and Free and Reduced Lunch status, but are

slightly different for Limited English Proficient (LEP) status: Cohort 3 includes a larger percent of LEP students.

Limitations of this analysis include: 1) The evaluator elected to take a stratified random sample of classmates because the larger group of classmates was not comparable to the Cohort 1 students in terms of ethnicity, English speaking skills, and free and reduced lunch (FRL) rates. However, the electronic file that contained the data on the characteristics of the students did not have complete data on all students. As a result, the number of students reflected in Table 14 is less than the total sample sizes for both groups. For example, data on FRL are available for 66 of the 80 Cohort 3 students. The percentages reported in Table 14 are determined based on the number of students with data for each data element; and 2) The 80 Cohort 3 students who took the DIBELS may not be representative of the larger Cohort 3 population. Specifically, the total Cohort 3 population had a larger percent of Hispanic and limited English proficient students and a smaller percent of white students than the 80 Cohort 3 students.

Table 14. Characteristics of Cohort 3 Students and Comparison Group

Characteristics	Cohort 3 Students (n=80)	Sample of Classmates (n=80)
Age	5.5 years	5.5 years
Ethnicity		
▪ Asian/Pacific Islander	4 (6%)	3 (4%)
▪ American Indian	2 (3%)	4 (6%)
▪ Hispanic	35 (49%)	30 (42%)
▪ African American	4 (6%)	5 (7%)
▪ White	26 (37%)	28 (39%)
▪ Other	0 (0%)	1 (1%)
Limited English Proficient	19 (29%)	11 (19%)
Free/Reduced Lunch	27 (41%)	28 (47%)

Table 15 presents the average scores for the two groups of students on each subtest of the DIBELS administered in fall 2006 and spring 2007. The number of students who had test scores in fall and spring are a little different because of student mobility: some students were present in the fall but left during the school year before spring testing and some students entered the school after fall testing and participated in spring testing.

Table 15. Average Scores of Cohort 3 Children and Comparison Group on the DIBELS

Subtest	Cohort 3 Students (n=80)		Sample of Classmates (n=80)	
	Fall 2006 (n=73)	Spring 2007 (n=75)	Fall 2006 (n=62)	Spring 2007 (n=77)
Initial Sounds Fluency	12.5		10.6	
Letter Naming Fluency	14.5	47.2	10.4	46.4
Phoneme Segmentation Fluency		43.5		42.6
Nonsense Word Fluency		35.6		34.8

The results show that Cohort 3 students had higher average scores than their classmates on the Initial Sounds Fluency and Letter Naming Fluency subtests when they entered kindergarten in fall 2006. However, the differences between the averages of the Cohort 3

students and their classmates are not significant, $p \leq .05$, which could be attributed to chance or error. By spring 2007, on average, Cohort 3 students performed at a level equal with their classmates. That is, they performed almost identical with their classmates on Letter Naming Fluency, Phoneme Segmentation Fluency, and Nonsense Word Fluency. In fact, the very small differences between the two groups are not significant, $p \leq .05$.

The overall results suggest Cohort 3 students may have been a little better prepared to enter school than classmates, but that they performed the same as classmates by the end of the school year. There are a couple possible explanations that may have affected these results, which may include the limitations of having no statewide data, and using the DIBELS data as described previously. Further possible explanation is that the sample of Cohort 3 students that took the DIBELS is not very representative of the larger Cohort 3 population. As presented earlier, the total Cohort 3 group had larger percents of Hispanic and Limited English Proficient students and a smaller percent of white students than the DIBELS sample. In addition, the small subpopulation of Cohort 3 students with DIBELS scores is less than 10 percent of the Cohort 3 population, increasing the likelihood the sample data may not accurately reflect the performance of the larger Cohort 3 population.

A second possible explanation is that many students appear to have "topped-out" on the assessment. That is, the DIBELS is a criterion-referenced test that assesses whether students meet three pre-established benchmarks on each subtest, such as low risk, some risk, and at risk. In this analysis, the average scores for both the Cohort 3 students and classmates were above the highest benchmark for all three end-of-year subtests, indicating that some students may have topped out on the test. For example, the raw score for the highest benchmark for Letter Naming Fluency is 40, and the two groups had average raw scores on the subtest of 46 and 47. In other words, because the students may have been able to score higher if the test had a higher ceiling, the end-of-year results may not accurately represent the performance of both groups.

Cohort 3 Student Attendance Results

The third analysis of data, using a *comparison group posttest only design,* examines the performance of Cohort 3 students and a sample of classmates on student attendance rate. As mentioned previously, the evaluation did not specify an expectation for the student attendance rates of Cohort 1 students as compared to classmates

Data are available for 619 Cohort 3 children and 14,535 of their classmates. From the 14,535 students in the comparison group, the evaluator selected a stratified random sample of 619 students, based on ethnicity.[13]

Table 16 shows the characteristics of the two populations on Limited English Proficiency, participation in the Free and Reduced Lunch Program, and ethnicity. The results show that the two populations are comparable on these three characteristics.[14]

Table 16. Characteristics of Cohort 3 Students and Classmates

Characteristics	Cohort 3 Students (n=619)	Sample of Classmates (n=619)
Limited English Proficiency	360 (58.2%)	330 (53.1%)
Free and Reduced Lunch	392 (63.3%)	396 (64.0%)
Ethnicity		
▪ Asian/Pacific Islander	27 (4.4%)	27 (4.4%)
▪ American Indian	8 (1.3%)	8 (1.3%)
▪ Hispanic	408 (65.9%)	408 (65.9%)
▪ African American	17 (2.7%)	17 (2.7%)
▪ White	159 (25.7%)	159 (25.7%)

Table 17 shows the percent of "days attended" to "days enrolled" for Cohort 3 students and a sample of their classmates. The results show that Cohort 3 children attended school in kindergarten at slightly lower rate than their classmates. To interpret the meaning of

13 The evaluator elected to take a sample because the larger group of classmates was not comparable to the Cohort 3 group in terms of ethnicity and LEP.

14 Given the large number of Cohort 3 children in the sample, they are fairly representative of the total Cohort 3 population. The only apparent difference is that the total Cohort 3 population had a smaller percent of Limited English Proficient students.

the difference, the evaluation calculated an "effect size," as explained previously. In this case, the effect size was small—a standard deviation of 0.21 as compared to the effect of other programs, suggesting just a small difference between the average attendance rates of Cohort 3 students with their classmates.

Table 17. Percent of Days Enrolled/Days Attended for Cohort 3 Students and Classmates

Cohort 3 Students (n=619)	Sample of Classmates (n=619)
95.2 %	96.6 %

Chapter V. Summary of Findings and Conclusions

The longitudinal study of the Nevada Comprehensive Early Childhood Education Program focused on two indicators, as required in Section 14 of Senate Bill 525—

- the developmental progress of children after their completion of the program, and
- parental involvement after completion of the program.

The annual evaluations of the Nevada ECE programs have found that the children who participated in the program made significant learning gains in preschool, decreasing the gap in achievement with average students., i.e., the developmental progress of children. The primary purpose of the longitudinal evaluation is to determine the effectiveness of the program on the academic achievement of children who participate in the program over time. The conclusions from the longitudinal study of the Nevada Comprehensive Early Childhood Education Program address this primary purpose as well as the second required component of the longitudinal evaluation, parent involvement.

This was done by studying two cohorts of Nevada ECE children:

- Cohort 1 — four-year olds who participated in Nevada ECE during 2003-04 and entered grade 2 in 2006-07, and
- Cohort 3 — four-year olds who participated in Nevada ECE during 2005-06 and entered kindergarten in 2006-07.

Findings for Cohort 1 in Grade 2 include the following: 1) Children were equally or better prepared to enter Grade 2 than classmates, 2) Children performed as well as or better than their peers on academic and social skills, and 3) Parent involvement and attendance rates were maintained and/or commensurate with that of their peers. Findings for Cohort 3 in Kindergarten include: 1) Children made significant gains in receptive and expressive vocabulary, 2) Non-English speaking children continued to make larger gains in receptive and expressive vocabulary than the norming population, 3) Children were equally or better prepared to start Kindergarten, 4) Children performed as well as or better than their peers on eight academic and socio-emotional skills, 5) Parent involvement rates were higher than that of their peers, and 6) Attendance rates were commensurate to their peers.

As recognized in national research and not unlike the findings in this report: 1) those who need it most reap the greatest benefits from early education programs, and 2) developmental gains dur-

ing these "critical periods" of learning help ease their transition into school preparing them for future success. Short and long-term benefits of preschool lead to better outcomes for children and lower costs to society. For every dollar invested in preschool education, $17.07 is returned to society as calculated in savings in welfare, less need for special education, greater earnings of participants, higher taxes paid on greater earnings, and both criminal justice system and victim costs of crime (High Scope Perry Preschool Project). Attending preschool boosts children's performance while easing their transition into the early grades and reduces their exposure to negative tracking by schools and/or to low expectations on the part of their parents and teachers. The link to preschool and the early grades is key to understanding and explaining the long-term effects of preschool. Mounting evidence testifies to the powerful effects that early schooling can have on children's life chances and ultimate well-being. Providing preschool programs to help children transition to the early grades yields large returns, especially for children from disadvantaged families. (Abecedarian Longitudinal Research Results & Advocacy Points, J. Sparling; Entwisle, 1995; Office of Educational, Research and Improvement-US Dept. of Ed., 1989).

In summary, the findings in all Cohorts in this report support these returns on investment:

- Nevada ECE children maintained the significant learning gains they achieved in preschool into kindergarten; scoring substantially below average before entry to ECE program, making substantial gains at the end of the ECE program, and increased or maintained their gains at the end of Kindergarten.
- Overall, Nevada ECE children were better prepared to enter Kindergarten, Grade 1, and Grade 2 than their classroom peers.
- Children who did not speak English at enrollment into preschool continued to make larger gains on expressive vocabulary than the norming population during kindergarten.
- The gains of non-English speaking students are slightly above the gains of the English speaking students in receptive and expressive vocabulary.
- Kindergarten readiness skills for Cohort 3 include 86% at or above average for academic skills, and 87% at or above average for social/emotional skills.
- Grade 2 readiness skills and achievement gains were maintained for Cohort 1 which include 76% at or above average for academic skills, and 80% at or above average for social/emotional skills.
- These substantial gains made by non-English speaking students and large percentages of students' readiness skill continuing to be at or above average may contribute to less remedial costs overtime as congruent to respective national research.

Based on these findings, each of the cohorts continue to increase or maintain the achievements gained as part of the NV ECE program, creating a foundation for their ongoing school success and putting them on a more level playing field with their peers. The short term gains have been actualized through Grade 2 as longer term gains are identified and may be paralleled to the related national research.

Recommendations and Assumptions based on data and national research:

Comparing the findings from Cohort 1 and 3 to national research, we can conclude that the gains these children made in the NV ECE program has helped close the achievement gap helping level the playing field for continued success in their school career. This was most strongly illustrated by the gains achieved by non-English speaking children. And as research illustrates, the return on investment of early childhood education is significant and reduces future costs to society. Furthermore, early childhood education programs, like NV ECE, can be seen as an effective strategy for short and long term benefits for student success and achievement. This evaluation will continue to study the effectiveness of the program by looking at trends in academic achievement of student subgroups over time while also studying the performance of NV ECE participants in light of current research.

*Note of caution related to DIBELS data and related limitations leads to the recommendation to use CRT data in the 2007-08 report which will provide a more valid and reliable measure of student progress.

APPENDIX A

Senate Bill 525, Section 14—
Nevada
Early Childhood Education

Sec. 14.

1. The Department of Education shall transfer from the State Distributive School Account the following sums for early childhood education:

   For the Fiscal Year 2005-2006..... $3,032,172

   For the Fiscal Year 2006-2007..... $3,152,479

2. The money transferred by subsection 1 must be used by the Department of Education for competitive state grants to school districts and community-based organizations for early childhood education programs.

3. To receive a grant of money pursuant to subsection 2, school districts and community-based organizations must submit a comprehensive plan to the Department of Education that includes, without limitation:

   (a) A detailed description of the proposed early childhood education program;

   (b) A description of the manner in which the money will be used, which must supplement and not replace the money that would otherwise be expended for early childhood education programs; and

   (c) A plan for the longitudinal evaluation of the program to determine the effectiveness of the program on the academic achievement of children who participate in the program.

4. A school district or community-based organization that receives a grant of money shall:

   (a) Use the money to initiate or expand pre-kindergarten educational programs that meet the criteria set forth in the publication of the Department of Education, entitled "August 2000 Public Support for Pre-kindergarten Education for School Readiness in Nevada."

   (b) Use the money to supplement and not replace the money that the school district or community-based organization would otherwise expend for early childhood educational programs, as described in this section.

   (c) Use the money to pay for the salaries and other items directly related to the instruction of pupils in the classroom.

   d) Submit a longitudinal evaluation of the program in accordance with the plan submitted pursuant to paragraph (c) of subsection 3. The money must not be used to remodel classrooms or facilities or for playground equipment.

5. The Department of Education shall develop statewide performance and outcome indicators to measure the effectiveness of the early childhood education programs for which grants of money were awarded pursuant to this section. In developing the indicators, the Department shall establish minimum performance levels and increase the expected performance rates on a yearly basis, based upon the performance results of the participants. The indicators must include, without limitation:

(a) Longitudinal measures of the developmental progress of children before and after their completion of the program;

(b) Longitudinal measures of parental involvement in the program before and after completion of the program; and

(c) The percentage of participants who drop out of the program before completion.

6. The Department of Education shall review the evaluations of the early childhood education programs submitted by each school district and community-based organization pursuant to paragraph (d) of subsection 4 and prepare a compilation of the evaluations for inclusion in the report submitted pursuant to subsection 7.

7. The Department of Education shall, on an annual basis, provide a written report to the Governor, Legislative Committee on Education and the Legislative Bureau of Educational Accountability and Program Evaluation regarding the effectiveness of the early childhood programs for which grants of money were received. The report must include, without limitation:

(a) The number of grants awarded;

(b) An identification of each school district and community based organization that received a grant of money and the amount of each grant awarded;

(c) For each school district and community-based organization that received a grant of money:

(1) The number of children who received services through a program funded by the grant for each year that the program received funding from the State for early childhood programs; and

(2) The average per child expenditure for the program for each year the program received funding from the State for early childhood educational programs;

(d) A compilation of the evaluations reviewed pursuant to subsection 6 that includes, without limitation:

(1) A longitudinal comparison of the data showing the effectiveness of the different programs; and

(2) A description of the programs in this State that are the most effective;

(e) Based upon the performance of children in the program on established performance and outcome indicators, a description of revised performance and outcome indicators, including any revised minimum performance levels and performance rates; and

(f) Any recommendations for legislation.

8. The sums transferred by subsection 1 are available for either fiscal year. Any remaining balance of those sums must not be committed for expenditure after June 30, 2007, and must be reverted to the State Distributive School Account on or before September 21, 2007.

APPENDIX B

Cohort 1 in Grade 2 and Cohort 3 in Kindergarten Teacher Surveys

Dear Classroom Teacher—

The Nevada Department of Education (NDE) needs your help in conducting a study of the effects of student participation in pre-kindergarten programs. NDE is collecting some comparative information on both students who have participated in pre-kindergarten programs and those who have not. One or more children in your classroom have been selected for the study. Please answer the following questions about _____ in terms of his/her readiness to enter Grade 2 in fall 2006 and his/her current performance in Grade 2 compared to other children in your class. Please also indicate if his/her parent's attended the parent/teacher conference your school held in fall 2006. Thank you for your help in this very important study.

Readiness to Enter Grade 2 in Fall 2006

1. Among children in your class this year, would you say that _____ was—
   - ☐ Substantially better prepared to start school ready to succeed
   - ☐ A little better prepared
   - ☐ Equally well prepared
   - ☐ A little less prepared
   - ☐ Substantially less prepared to start school ready to succeed

Current Performance in Grade 2 in Spring 2007

2. Please compare _____ current performance with the rest of the children in his/her class on the characteristics that children may need to be successful in Grade 2. For each characteristic, please indicate with a "✓" whether _____ performed less than peers, a little less than peers, about the same as peers, a little better than peers, or better than peers.

Characteristics	Less than peers	A little less than peers	About the same as peers	A little better than peers	Better than peers
i. Use knowledge of phonics and structural elements (e.g., syllables, basic prefixes, roots, and suffixes) to decode unfamiliar words of one or more syllables in context.					
j. Write stories and poems.					
k. Follows two-step oral directions to complete a task.					
l. Use the patterns in numbers to skip count.					
m. Pays attention in class					
n. Is well-behaved in the class					
o. Gets along with other children					
p. Has problem-solving skills					

Parent/Teacher Conference

3. Did the parents(s) of _____ attend the parent/teacher conference in fall 2006?

   a. Yes ☐ No

Dear Classroom Teacher—

The Nevada Department of Education (NDE) needs your help in conducting a study of the effects of student participation in pre-kindergarten programs. NDE is collecting some comparative information on both students who have participated in pre-kindergarten programs and those who have not. One or more children in your classroom have been selected for the study. Please answer the following questions about {NAME} in terms of his/her readiness to enter kindergarten and his/her performance in kindergarten as well as his/her parent's participation in parent/teacher conferences. Thank you for your help in this very important study.

Kindergarten Readiness

1. Among children in your class this year, would you say that _____ was—
   - ☐ Substantially better prepared to start school ready to succeed
   - ☐ A little better prepared
   - ☐ Equally well prepared
   - ☐ A little less prepared
   - ☐ Substantially less prepared to start school ready to succeed

Kindergarten Performance

2. Please compare _____ current performance with the rest of the children in his/her class on the characteristics that children may need to be successful in kindergarten. For each characteristic, please indicate with a "✓" whether _____ performed less than peers, a little less than peers, about the same as peers, a little better than peers, or better than peers.

Characteristics	Less than peers	A little less than peers	About the same as peers	A little better than peers	Better than peers
a. Identify and use letter/sound relationships to identify some words					
b. Draw or write, with teacher assistance, stories about familiar experiences and events					
c. Listen to and follow oral directions					
d. Count to 20					
e. Pays attention in class					
f. Is well-behaved in the class					
g. Gets along with other children					
h. Has problem-solving skills					

Parent/Teacher Conference

3. Did the parents(s) of _____ attend the parent/teacher conference in fall 2004?
   a. Yes ☐ No